APPENDIX E

WATER CONSERVATION PRACTICES

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Recommended Water Conservation Practices

WATER CONSERVATION:

Miami-Dade County is currently developing recommendations for new development that would achieve higher water use savings than currently required by code. These recommendations will be submitted for adoption by the BCC in the next 12 months.

The following is a list of water saving practices to be used as a guide to achieve additional water savings above current code requirements. These recommendations are targeted at new commercial and institutional construction projects and are based on the following principles:

- Use waterless technologies where available
- Maximize use of on-site sources of water
- Choose equipment that is water and energy efficient
- Install automatic shot offs, solenoids and controllers to turn water off when not in use
- Install flow restrictors when possible
- Eliminate once-through cooling

Plumbing Fixtures and Practices

Toilets and Urinals

- Ensure all water closets use no more than 1.3 gallons per flush, high efficiency toilets (HETs) can achieve 20 to 25% water use savings.
- Use toilets included in the Uniform North American Requirements (UNAR) certified list.
- Consider waterless urinals

Faucets

- Install hand washing faucets or aerators that use no more than 1.0 gallons per minute
- Install sensor controls on hand washing faucets in public restrooms
- Install showerheads that use no more than 1.5 gallons per minute

Plumbing Design

- Use tankless water heating or other devices that reduce water wasted waiting for the water to get hot where possible
- Post prominent signs in all restrooms and other water using areas listing telephone numbers to promptly report leaks and other plumbing problems.

Metering and Sub-Metering

- Install a separate meter and keep monthly records of all major water-using function such as cooling towers and individual buildings.

Heating Ventilation and Air Conditioning Equipment

Cooling Towers

- Eliminate all once-through cooling
- On cooling towers, install both makeup and blowdown meters
- Equip cooling towers with overflow sensors on the overflow pipes to alert the operator to problems that can waste thousands of gallons daily

- All cooling towers should achieve at least (5.0) cycles of concentration

Boilers

- Equip boilers with makeup meters and conductivity controllers for blowdown control
- Reuse or return steam condensate to the boiler wherever possible
- Install makeup meters on all recirculating closed water loops used for heating and cooling systems so that leaks in the recirculating systems can be easily detected.

Food Service

Equipment Selection

- Eliminate all water cooled equipment using once-through cooling
- All water-cooled equipment should be eliminated unless it uses chilled water or cooling tower loop. This includes ice makers, refrigeration equipment, and ice cream machines.

Dishwashing Equipment

- Dishwashers should use less than 1.2 gallons per rack for fill-and-dump machines and less than 0.9 gallons per rack for all other types of machines. For under the counter machines, water use should not exceed 1.0 gallons per rack for high-temperature machines and 1.7 gallons per rack for low-temperature machines and 1.7 gallons per rack for low temperature machines.
- Pre-rinse spray valves that use 1.6 gallons per minute and have a shot off valve

Food Preparation

- Use connectionless steamers. They do not need either a water supply or a wastewater drain.
- Select ice machines that use no more than 20 gallons per hundred pounds of ice made.

Efficient Landscape Irrigation

Water can be conserved through the use of a properly designed and managed landscape irrigation systems, and choice of plant material.

Irrigation controllers

- Moisture sensing shut-off switch equipment for automatic irrigation systems to avoid irrigation during periods of sufficient soil moisture. Said equipment shall consist of an automatic mechanical or electronic sensing devise or switch that will override the irrigation cycle of the sprinkler system when adequate rainfall has occurred.

Irrigation equipment and design

- Use drip irrigation or microsprinklers for planning beds (once plants are established, irrigation is not usually needed)
- Irrigated areas shall not be less than 4 feet wide, except when next to contiguous property or using micro or drip irrigation.
- Create hydrozoned areas, with beds and turf watered separately (plant beds may not need irrigation after plants are established)
- Design systems to maintain manufacturer-recommended pressure to prevent misting and unnecessary pipe wear

Soil

- Terrace any area that exceeds a 3.1 slope
- Do not add soil on top of tree roots

Mulch

- Use organic, preferably locally derived mulch, such as pine bark, dyed landscape mulch, or enviromulch. Avoid cypress mulch which encourages deforestation of natural areas.
- Limit use of rock mulch due to increased heat and reflection
- Mulch should be 3-4 inches deep over the root zone and several inches away from the base of plants

Plant Selection

- Use low-maintenance (drought tolerant) species. The Extension Service's Florida Yards and Neighborhoods Program list these in a publication for South Florida. http://miami-dade.ifas.ufl.edu/programs/fyn/publications/dtpl.htm
- Plant selection should be based on the plant's adaptability to the existing conditions present at the landscaped area and native plant communities. Select plants that are drought and freeze tolerant.

- For areas with limited soil space such as parking lots, use naturally small stature trees or use palms. Information for small stature trees for restricted spaces, such as narrow swales and limited space residential lots where canopy and roots can become problem can be found at http://miami-dade.ufledu/programs/urbanhort/publications/PDF/Samll%20Trees%20for%20Miami-Dade.pdf

- Xeriscape or Florida-friendly landscape principles should be applied. These principles conserve water and protect the environment and include efficient irrigation, practical use of turf, appropriate use of mulches, and proper maintenance. (Ref. 373.185 F.S.)